

Appl. No. : 10/642,358
Filed : August 15, 2003

REMARKS

In the February 16, 2005 Office Action, the Examiner: objects to Claims 32 and 33; rejects Claim 49 under 35 U.S.C. § 102(b) as anticipated by "A Structure-from-motion Algorithm for Robot Vehicle Guidance" by Wang, et al, ("Wang"); rejects Claims 27, 42, 44, and 51 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,321,147 by Takeda, et al., ("Takeda"); rejects Claims 1, 2, and 11-17 as unpatentable under 35 U.S.C. § 103(a) over U.S. Patent No. 5,838,828 by Mizuki, et al., ("Mizuki") in view of U.S. Patent No. 5,387,947 by Shin ("Shin"), and U.S. Patent No. 5,109,425 by Lawton ("Lawton"); rejects Claims 3, 4, 6, and 7 under 35 U.S.C. § 103(a) as being unpatentable over Mizuki in view of Shin in view of Lawton as applied to Claim 1 and further in view of U.S. Patent No. 6,496,592 by Lanini; rejects Claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Mizuki in view of Shin and Lawton as applied to Claim 1, further in view of Takeda; rejects Claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Mizuki in view of Shin and Lawton as applied to Claim 1, further in view of U.S. Patent No. 5,001,635 by Yasutomi ("Yasutomi"); rejects Claim 10 under 35 U.S.C. § 103(a) as being unpatentable over unpatentable over Mizuki in view of Shin and Lawton as applied to Claim 1, further in view of U.S. Patent No. 6,408,109 by Silver; rejects Claim 18 under 35 U.S.C. § 103(a) as being unpatentable over unpatentable over Mizuki in view of Shin and Lawton as applied to Claim 1, further in view of U.S. Patent No. 5,995,884 by Allen, et al., ("Allen"); rejects Claims 19-25, 50, and 53 under 35 U.S.C. § 103(a) as being unpatentable over Mizuki in view of Wang; rejects Claim 26 under 35 U.S.C. § 103(a) as being unpatentable over Mizuki in view of Wang as applied to Claim 19, further in view of U.S. Patent Application No. 2004/0017937 by Silverstein; rejects Claim 28 under 35 U.S.C. § 103(a) as being unpatentable over Takeda in view of Yasutomi; rejects Claims 29-33 under 35 U.S.C. § 103(a) as being unpatentable over Takeda in view of U.S. Patent No. 6,809,490 by Jones ("Jones"); rejects Claim 41 under 35 U.S.C. § 103(a) as being unpatentable over Takeda in view of U.S. Patent No. 6,362,589 by Inoue, et al., ("Inoue"); rejects Claim 43 under 35 U.S.C. § 103(a) as being unpatentable over Takeda in view of U.S. Patent No. 5,081,585 by Kurami, et al., ("Kurami"); rejects Claims 45-48 and 52 under 35 U.S.C. § 103(a) as being unpatentable over Yasutomi in view of U.S. Patent No. 4,628,453 by Kamejima, et al., ("Kamejima"); rejects Claim 51 under 35 U.S.C. § 102(e) as being anticipated by Takeda; and states that Claims 34-40 would be allowable

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if rewritten in independent form including all the limitations of the base claim and any intervening claims. Applicants request reconsideration of the rejections in view of the foregoing amendments and the following comments.

Objections to Claims 32 and 33

The Examiner objects to Claims 32 and 33 as "being a substantial duplicate of each other." Applicants have canceled Claim 33 herewith, and accordingly request the Examiner to withdraw the objections to Claims 32 and 33.

Amendments to Claims 1, 19, 27, and 50-52

Applicants have amended independent Claims 1, 19, 27, and 50-52 herewith to distinguish over the prior art. Accordingly, the prior rejections to the same are moot. Support can be found for these amendments in paragraph [0045], "for example, the process can set an alarm or an alert, such as, to indicate to a user that the robot is stuck. In another example, the process can initiate procedures to free the robot." Support can also be found in Claim 8, now canceled.

In amended Claim 1, the method includes "automatically providing an indication to a user that an undesired stoppage of the mobile robot has occurred," under the specified conditions.

In amended Claim 19, the method includes "automatically providing an indication to a user that an undesired stoppage of the mobile robot has occurred," under the specified conditions.

In amended Claim 27, the method includes "automatically changing the behavior of the mobile robot," under the specified conditions.

In amended Claim 50, the circuit includes "a means for automatically providing an indication to a user that an undesired stoppage of the mobile robot has occurred," under the specified conditions.

In amended Claim 51, the computer program embodied in a tangible medium includes "a module with instructions for changing the behavior of the mobile robot at least partly in response to a detected mismatch, wherein the behavior is changed if: the perceived motional state of the mobile robot indicates that the mobile robot is not moving; and the intended motional state of the mobile robot is indicates that the mobile robot is moving."

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In amended Claim 52, the circuit includes "a circuit configured to discontinue commands to propel the mobile robot in the forward direction if: the mobile robot has ceased traveling in the forward direction, and the mobile robot is intended to be traveling in the forward direction."

Applicants respectfully submit that Claims 1, 19, 27, and 50-52 as amended are now distinguished over the cited references and request allowance of the same. For example, Takeda states that "[i]f the obstacle detecting unit 5 senses any obstacle 4, the obstacle detecting unit 5 outputs a signal to the vehicle control unit 20 to notify it of a detection of the obstacle 4 and the vehicle control unit 20 outputs an instruction to the running control unit 14 to stop the vehicle 1 (S3)." See Col. 7, lines 22-26.

By contrast, no sensing of even awareness of an object causing an obstacle is required in any of Claims 1, 19, 27, and 50-52. Rather, advantageously, a mobile robot using any of Claims 1, 19, 27, and 50-52 can advantageously identify and potentially take action, such as "automatically changing the behavior" as discussed in Claim 27 or "automatically providing an indication to a user" as discussed in Claim 1, for example, without even having to observe the object causing an obstruction. This can be of significant benefit, especially when the obstruction is outside the view of a camera.

Other Dependent Claims

Applicants have incorporated Claim 8 into Claim 1, and have canceled Claim 8 herein. Claims 2-7, 9-18, 20-26, 28-32, 34-49, and 53 depend from and further define Claims 1, 19, 27, and 50-52 as appropriate (and intervening claims, as applicable). Claims 2-7, 9-18, 20-26, 28-32, 34-49, and 53 add additional limitations that Applicants believe are not taught or suggested by the prior art. For example, as explained in Applicants' prior response, the computation of the sloppy XOR of Claim 15, "wherein the sloppy XOR is computed by comparing a pixel from the binary map of the first image pixel data with a location of (x,y) to a plurality of pixels in the binary map of the second image pixel data, wherein the plurality of pixels includes a pixel with a location of (x,y)," is not a mere application of a conventional XOR applied to a plurality of pixels as taught by Mizuki.

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Allowable Subject Matter

The Examiner states that Claims 34-40 would be allowable if rewritten in independent form. In view of the amendment to Claim 27, Applicants have not rewritten Claims 34-40 in this response.

Summary

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner to withdraw the rejections of Claims 1-7, 9-32, and 34-53 and the objection to Claim 32. Accordingly, Applicants respectfully request the Examiner to pass the present application to the issue process.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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